Replacement of transformers SUMIDA M41 LHJD 172 EIN3 Transformer fitted the JRC NRD-515, but more manufactured! Return of experience September 4, 2016

I have done recently, the acquisition of a receiver, JRC NRD-515, an old dream of passionate SWL, and yet, I already had in my possession 3 JRC NRD-525 and a JRC NRD-545.
This new receiver from the USA worked normally in his delivery. A few days later, I realized my first full inspection of the entrails of the receiver with control and optimization settings. I quickly found that the map of the synthesizer had been attacked by a corrosive liquid. They began has corroded slightly copper track and also stained two shielding of the part of the VFO Mixer circuit coil. One of the mainstays of adjustment was blocked. I wanted to turn slightly the kernel and the adjustment in the upper part of the core slot broke. This brokenness prevented to achieve the lower optimization setting.

For the small history of the JRC NRD-515 receiver, this was manufactured between August 1981 and November 1985. Transformers SUMIDA equipping this receiver are no longer manufactured today. At the time of the making of this receiver, these transformers, were manufactured in small quantities, specifically on behalf of JRC Japan.

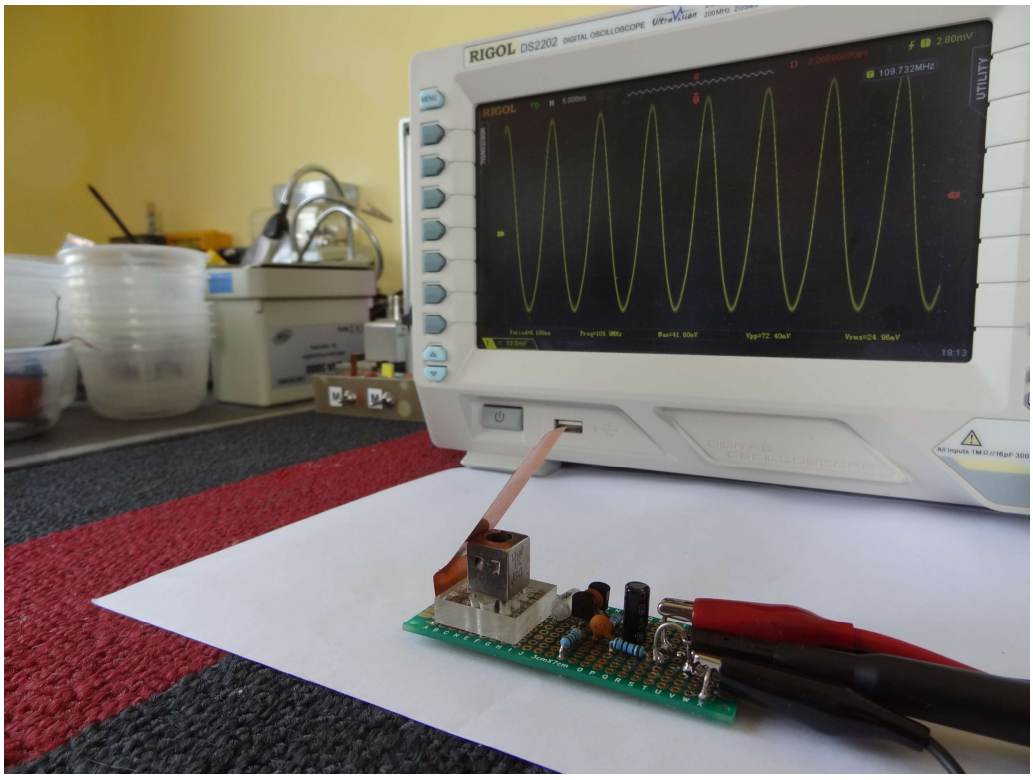
Of these conditions, it was impossible to find on the internet any information specific "Datasheet"on these transformers SUMIDA. I even made a request to the parent company, SUMIDA, three months ago.
I got no response to date to my request for feature of this transformer.

I groped several week with several inductance meter without knowing the actual value of the inductance

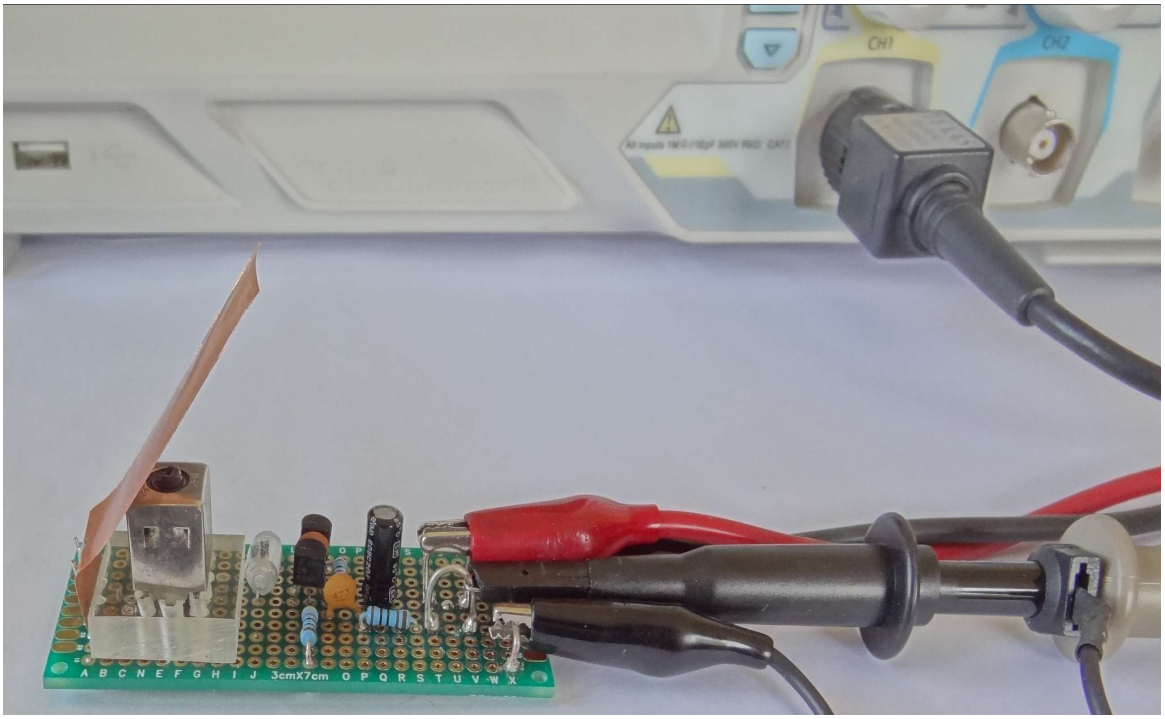
After spending more than three months in research, doubts and looking for an impossible wreck, to necessarily be able to cannibalize all transformers and many other components, I arrived for my purpose in finding the solution.

The solution was on the Internet and more particularly on Youtube:
https://www.youtube.com/watch?v=Ff5xOENID7w.

This allowed me to find the literature of "The Coil Tester"
http://www.robkalmeijer.nl/techniek/electronica/radiotechniek/hambladen/73/1990/09/page48/index.html
Necessarily the transistors for this achievement are no longer manufactured, but are available for purchase on Ebay

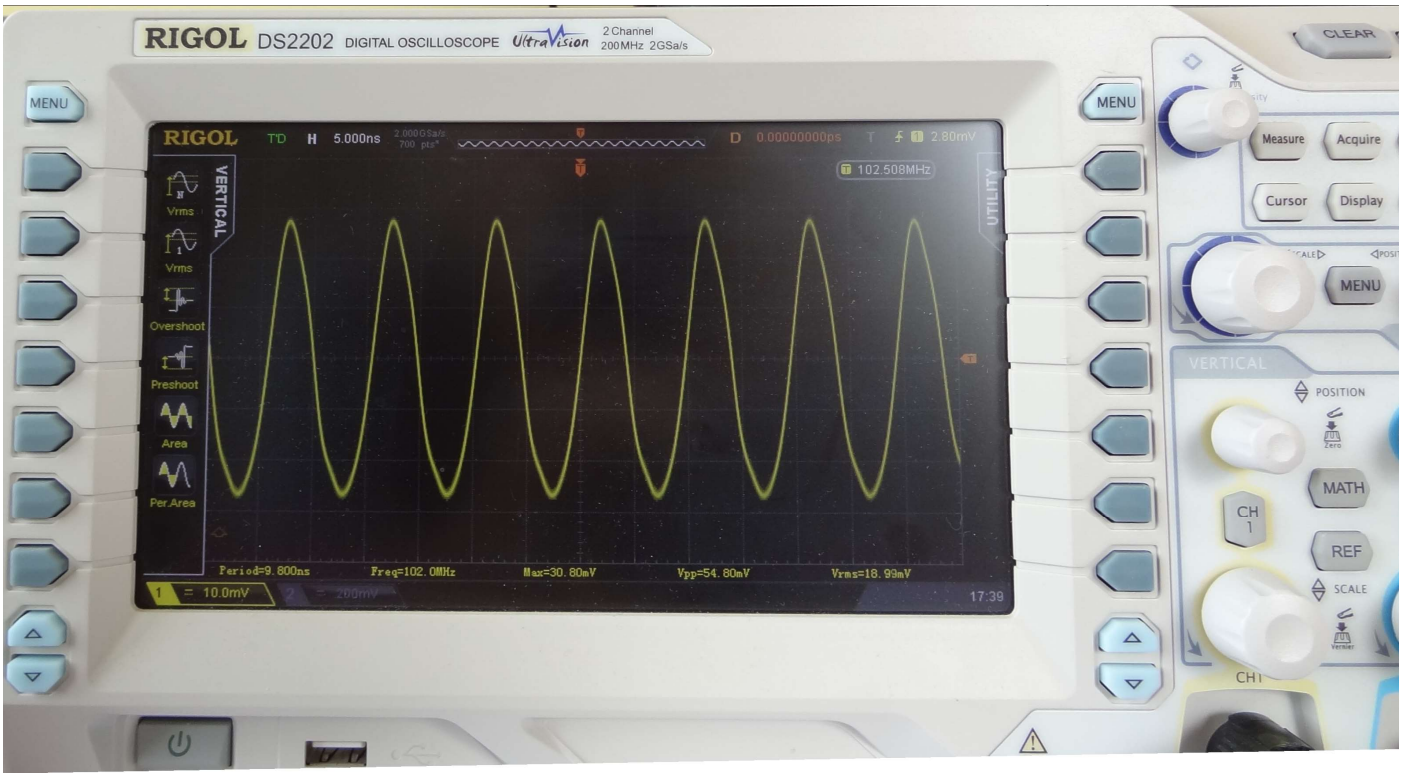


After making easy **"The Coil Tester", I began to check the frequency of oscillation.**
"The test Coil" in operation
SUMIDA M41 LHJD 172 EIN3 transformer test



The test of oscillation of the frequency of the transformer *SUMIDA M41 LHJD 172 EIN3, could be carried out.*
Thanks to the concept of the module "The Coil Tester" *I built easily*
Notice the soft strip of copper added to make mass the armored housing of the transformer for a real result of the frequency of oscillation.

Note: If the grounding of the shielding is omitted, the frequency squeezed about 3 MHz higher.
If the armored corps of the transformer is not implemented during the control of frequency, will be also superior of about 4 MHz frequency is a global possible of higher error in addition to 7 MHz



Display of the frequency of oscillation of the *transformer SUMIDA M41 LHJD 172 EIN3*
Frequency of oscillation = 109.807 MHz
Max = 42.40 mV
VPP = 72.40 mV
Vrms = 25.20 mV

I could not unfortunately, check the frequency range of the SUMIDA transformer, because the core is stuck inside the body of the coil. As a result, it has been impossible to screw or unscrew the ferrite core to control the possible range of use frequency.

Thanks to the "Coil tester "realized and its test of resonance, allowed me, to obtain essential information, in order to achieve similar processors in characteristic of resonance.
The coils were made with the TOKO type BTKENS-T1044Z, the famous type 10 x 10 purchased on EBay
Of course the coil of this model do not match what I wanted, it took me take them apart with minute care, remove the existing winding and re-do the primary and the secondary with 0.18 mm, enameled copper wire.

See end of this document for the implementation of similar to the SUMIDA M41 LHJD 172 EIN3 coil

It is noted, it took me to realize 3 times the coils before getting the values identical to those of the SUMIDA coil. This, to remove the "Synthetize" card, de soldering, relocate, re solder back card, connect and disconnect all the cables and carefully without damaging any other element or component.

There are 31 transformers SUMIDA in the JRC NRD-515, including 14 identical processors, reference *SUMIDA M41 LHJD 172 EIN3* , *four side "Receiver" T2, T3, T4, T7* and ten side "Synthesizer" T3, T7, T8, T9, T10, T11, T12, T15, T16, T17

You, passionate about radio, you must have, you also, you realize that in the new manufacturing of receiver or transceiver this type of transformer is more and more rarely settled and when calibrating your old receivers especially, containing these types of transformers, it must take minimal precautions to handle these nuclei of ferrites with a or adapted well to the well calibrated slot screwdrivers is a plastic or composite blade to avoid damaging the ferrite cores, when it is possible.

In the end it was a great emotion, happy and very proud to put back in operation this famous and mythical receiver JRC NRD-515.

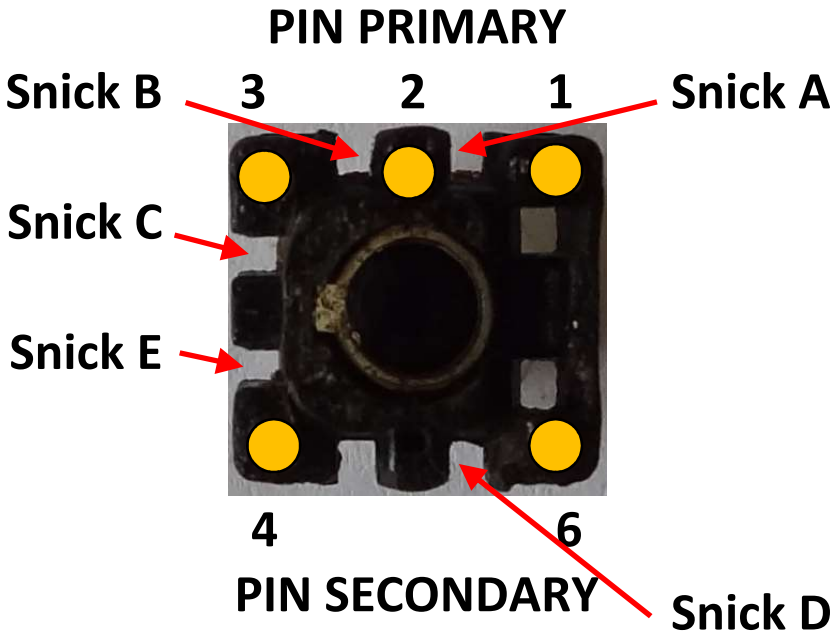
Bernard MALET

My sincere thanks for the valuable information provided free of charge on internet by:
W2AEW , ALAN E WOLKE and to **N4TMI** , Michael A. Cowington

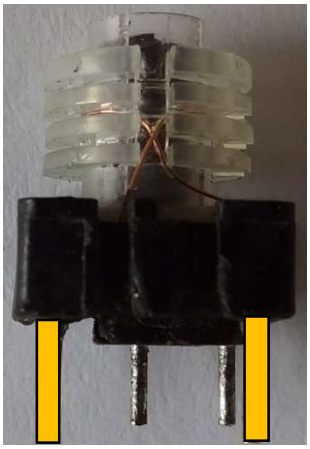
Winding realization SUMIDA M41 LHJD 172 EIN3
JRC NRD-515 RF transformers XFMR

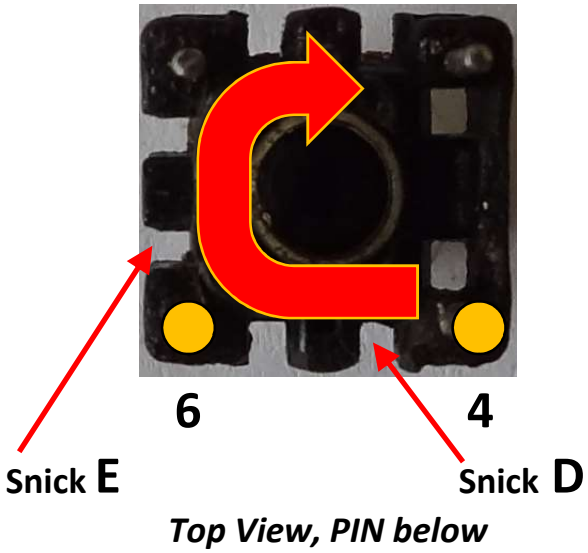
Receiver : T2, T3, T4, T7

Synthesizer : T3, T7, T8, T9, T10, T11, T12, T15, T16, T17



PIN Bottom view



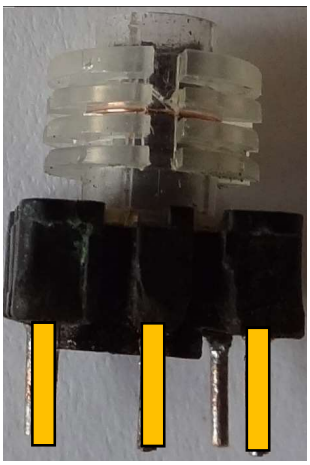


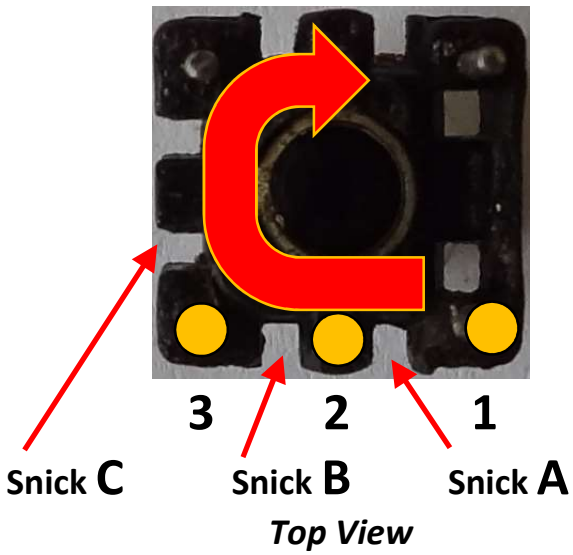
Top View, PIN below

Start with the secondary with the enameled copper wire of 0.18 mm

A) SECONDARY PIN 4 and 6

PIN 4 wire from the Snick **D**
The wire goes back into the central vertical groove and goes into the second horizontal groove rotates in the direction of clockwise taking only one tower, then down into the vertical groove, passes into the slot to reach the Snick **E** and **PIN 6.**





Top View

Continue by the Primary with the enameled copper wire of 0.18 mm

B) PRIMARY PIN 1, 2 and 3

PIN 1 wire from the Snick **A**
The wire goes into the vertical groove and goes into the second high horizontal groove rotates in the direction of clockwise by just one turn uses the central vertical groove to join the first high throat and did another round, again the direction of clockwise then descends into the vertical groove to join the Snick **B** to the **PIN 2**, then rises after welding t(he wire, the Snick **B** to the central vertical groove to the second high horizontal groove, makes a turn in the direction of clockwise, dates of the highest horizontal groove and a round then down again in the vertical groove and goes through the Snick **C** joining the **PIN 3**.

Bernard MALET September 04, 2016